Amendments to the Claims

The following Listing of Claims replaces all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1 (canceled)

Claim 2 (currently amended): A bar coding method, comprising:

modulating a base image with a graphical encoding of a message to produce a graphical bar code; and

generating a fiducial mark pattern comprising a plurality of dots surrounding ~~The method of claim 1, wherein the dots of the fiducial mark pattern surround~~ the graphical bar code and arranged to track one or more reference locations and local deformation across the graphical bar code.

Claim 3 (currently amended): The method of claim 2 [[1]], wherein the fiducial mark pattern comprises reference color dots of a prescribed color and background color dots of a prescribed color different from the prescribed color of the reference color dots.

Claim 4 (previously presented): The method of claim 3, wherein the fiducial mark pattern comprises reference color dots and the background color dots surrounding the graphical bar code and arranged in a repeating pattern having a characteristic period and comprising one reference color dot and one or more background color dots.

Claim 5 (original): The method of claim 4, wherein the reference color dots are arranged along a rectangular fiducial mark path surrounding the graphical bar code.

Claim 6 (original): The method of claim 5, wherein the rectangular fiducial mark path has a height dimension of $1+H \cdot T$ and a width dimension of $1+W \cdot T$, where H and W have integer values of 1 or greater and T is the characteristic fiducial mark pattern period.

Claim 7 (original): The method of claim 6, wherein the graphical bar code has a height dimension of $H \cdot T - 2 \cdot \Delta - 1$ and a width dimension of $W \cdot T - 2 \cdot T - 1$, where Δ is the dot spacing between the graphical bar code and the fiducial mark pattern.

Claim 8 (currently amended): The method of claim 2 [[1]], further comprising rendering the graphical bar code and the fiducial mark pattern with dots of the same size.

Claim 9 (currently amended): The method of claim 2 [[1]], wherein the fiducial mark pattern comprises at least one orientation mark.

Claim 10 (original): The method of claim 9, wherein the orientation mark is located at a corner position of the fiducial mark pattern.

Claim 11 (currently amended): The method of claim 9, wherein the orientation mark is different from other marks of the fiducial mark pattern in size, shape, or both size and shape.

Claim 12 (currently amended): A computer program residing on a computer-readable medium and comprising computer-readable instructions for causing a computer to:

modulate a base image with a graphical encoding of a message to produce a graphical bar code; and

generate a fiducial mark pattern comprising a plurality of dots surrounding the graphical bar code and arranged to track one or more reference locations and local deformation across the graphical bar code.

Claim 13 (previously presented): A bar coding method, comprising:

identifying fiducial mark candidates in a fiducial mark pattern comprising a plurality of dots surrounding a graphical bar code comprising a base image modulated with a graphical encoding of a message;

computing a fiducial mark path based upon one or more of the identified fiducial mark candidates;

identifying one or more reference locations based upon the computed fiducial mark path; and

correcting local deformations in the graphical bar code based upon fiducial mark interface locations computed based on identified fiducial mark candidates.

Claim 14 (original): The method of claim 13, further comprising correcting global deformations in the graphical bar code based upon the one or more reference locations.

Claim 15 (original): The method of claim 13, wherein identifying fiducial mark candidates comprises identifying centers of reference color dots in the fiducial mark pattern.

Claim 16 (original): The method of claim 13, further comprising discarding identified fiducial mark candidates having dot sizes larger than a selected dot size.

Claim 17 (original): The method of claim 13, further comprising discarding identified fiducial mark candidates spaced from the computed fiducial mark path by more than a selected distance.

Claim 18 (original): The method of claim 13, wherein a fiducial mark candidate located within a selected range from one of the identified reference locations is identified as a valid fiducial mark and its location is identified as a reference location for a neighboring fiducial mark candidate.

Claim 19 (original): The method of claim 18, further comprising discarding a fiducial mark candidate spaced outside of a selected range from an identified reference location is discarded.

Claim 20 (original): The method of claim 13, further comprising identifying the orientation of the graphical bar code based upon an asymmetric fiducial mark candidate in the fiducial mark pattern.

Claim 21 (previously presented): A computer program residing on a computer-readable medium and comprising computer-readable instructions for causing a computer to:

identify fiducial mark candidates in a fiducial mark pattern comprising a plurality of dots surrounding a graphical bar code comprising a base image modulated with a graphical encoding of a message;

compute a fiducial mark path based upon one or more of the identified fiducial mark candidates;

identify one or more reference locations based upon the computed boundary path; and

correct local deformations in the graphical bar code based upon fiducial mark interface locations computed based on identified fiducial mark candidates.

Claim 22 (currently amended): The method of claim 2 [[1]], wherein the dots of the fiducial mark pattern are arranged to track local deformations in two dimensions across the graphical bar code.

Claim 23 (previously presented): The method of claim 22, wherein local deformations in the graphical bar code are tracked based upon fiducial mark interface locations.

Claim 24 (previously presented): The computer program of claim 12, wherein the fiducial mark pattern comprises reference color dots and the background color dots surrounding the graphical bar code and arranged in a repeating pattern having a characteristic period and comprising one reference color dot and one or more background color dots.

Claim 25 (previously presented): The computer program of claim 24, wherein the dots of the fiducial mark pattern are arranged to track local deformations in two dimensions across the graphical bar code.

Claim 26 (previously presented): The computer program of claim 25, wherein local deformations in the graphical bar code are tracked based upon fiducial mark interface locations.